

You may depend on the Truth of this Account, and I hope it will be acceptable; the Hurry I am in, being Physician to the Army now on its March to the Assistance of the Allies, and to set out from this Place To-morrow, with the Commander in chief, who has been some time here indisposed, and under my Care, prevents me from adding any more at present; but you shall be sure to hear from me, when we are advanced into *Germany*. In the mean while, believe me to be sincerely,

Dear Sir,

Riga, Feb. 24.
1748.

Your most humble Servant,

James Mounsey.

V. *An Abstract of Mr. Bonnet, F. R. S. his Memoir concerning Caterpillars; drawn up in French by Mr. Abraham Trembley, F. R. S. here translated into English.*

Read April 27.
1748. **T**HE Paper lately communicated by the *President* from Monsieur *Bonnet* of *Geneva*, contains various Experiments he has made relating to the Respiration of Caterpillars.

Malpighi first discover'd, that those 18 Openings or Orifices, which are placed 9 on each Side of the Caterpillar, and which are called by the Name of *Stigmata*, serve to give Respiration to this Class of Animals.

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Monsieur *de Reaumur* has repeated the Experiments of *Malpighi*, and made several new ones upon this Subject. And he has been of Opinion, that these Apertures served only for the Inspiration of the Air, which the Caterpillar afterwards expired, through the whole Superficies of its Body. What he has wrote upon this Subject is in the first Tome of his Memoirs, at the 131st and the following Pages.

Mr. *Bonnet* has had Reason to think these Caterpillars do both inspire and expire the Air by their *Stigmata*; and that they did not expire any of it through the Pores of their Body. This Paper here shewn gives an Account of 36 several Experiments, made chiefly with Design to discover this Fact, whether indeed these Insects did both inspire and expire the Air by their *Stigmata*, or only inspire it. These Experiments, like Mr. *de Reaumur*, consist mostly in the plunging of Caterpillars either into Water, or some other Liquor; some also they daubed or anointed over with fat and greasy Substances, some quite over, and others only in some Places.

Mr. *Bonnet* is inclined to think, that the small Bubbles of Air observed all over their Bodies, when they are immersed in Water, do not come from the Air included within them, and which they expired by the Pores; but that they are formed by the Air only lodged near the Surface of the Skin of the Caterpillar, as it is about the Superficies of all other Bodies: He has endeavoured to contrive it so, as that no Air might remain thus sticking to the Skin of those Insects upon which he has made

these Experiments. And for this Purpose, before he plunged them in the Water, he first washed them all over with a Hair-Pencil or Brush; and these being afterwards immersed in the Water, but very few Bubbles of Air have been discovered on the Outside of their Bodies; and fewer as it appeared than Mr. *de Reaumur* had found upon those, upon which he made his Experiments; neither was this last of Opinion that all those Bubbles which he took notice of were formed by the Air rushing out through the Pores, but that some of them were also formed by the Air sticking about the exterior Part of the Skin.

When a Caterpillar is plunged in Water, one Bubble of Air is almost constantly observed upon each of the *Stigmata*. Mr. *de Reaumur* concluded, that the Air was not expired by these *Stigmata*, because he could never observe that any Bubbles of Air were ever driven out of these *Stigmata*, as one would think there must have been, if the Air was really expired by these Apertures. Mr. *Bonnet*, on the contrary, has seen some Bubbles of Air come out from these *Stigmata*, and that has contributed to make him rather think that the Air inspired was also discharged at these same Offices. But as these Experiments are not decisive, he is unwilling absolutely to determine, but proposes the making more new Experiments.

A Caterpillar can remain several Hours under Water without perishing; it only falls into a State of Numbness; but if again taken out of the Water, it is not long before it again shews Signs of Life, and recovers. Mr. *Bonnet* has sought by some
Experiments,

Experiments, to know, if some only of these 18 *Stigmata* of a Caterpillar might not be sufficient for the Purposes of Respiration: He has plunged some of them only partially in Water, sometimes by the Tail, and others by the Head foremost; but always so that either 2 or more *Stigmata* might be out of the Water; and in these Cases the Caterpillar has not fallen into the torpid State above-mentioned, as it constantly did when intirely immersed. He has lifted out of the Water some of the *Stigmata* of Caterpillars that had been quite immersed, and that were so become torpid and motionless; and these have also soon after shewn Signs of Life and Motion. One of the Caterpillars, upon which Mr. *Bonnet* made Experiments, lived 8 Days, suspended in the Water, and only exposing to the Air its posterior *Stigmata*; that is to say, that only the 2 last *Stigmata* were out of the Water.

He during this time carefully observed his Caterpillar; and he remarked, from time to time, when the Insect moved itself, that little Streams of Bubbles came out of the anterior *Stigma* on the left Side. It appeared to him, by this and some other Experiments, that amongst all the 18 *Stigmata*, the two anterior and the two posterior ones are of a greater Use for the Respiration of the Caterpillars than any of the others. He also found, that, upon the choaking up these *Stigmata* with Butter, the Animal seemed to suffer much more sensibly, than when he so choaked up all the intermediate ones.

All these Experiments of Mr. *Bonnet*, and which are very particularly detailed in his Paper, were made

with great Attention, Patience, and Sagacity. And it is to be wished that he may continue thus diligently to apply himself to the Study of Natural History.

VI. *Divers Means for preserving from Corruption dead Birds, intended to be sent to remote Countries, so that they may arrive there in a good Condition. Some of the same Means may be employed for preserving Quadrupeds, Reptiles, Fishes, and Insects, by M. de Reaumur, F. R. S. and Memb. Royal. Acad. Sc. Paris. translated from the French by Phil. Hen. Zollman, Esq; F.R.S.*

Read from March 10.
1747-8. to April 27,
1748.

PERSONS who have at Heart the Progress of Natural History, and intend to facilitate the Study of it, must needs be desirous to see the Collections of divers Sorts of Productions, which form the Objects of it, multiplied and enlarged, and therefore will be disposed to contribute towards it with all their Ability. Those Collections present together in one Place more different Sorts of Bodies of the Mineral, Vegetable, and Animal Kingdoms, there to be at Leisure compared and examined one against the other, than one could hope to find successively in the longest and most laborious Voyages and Travels. In order to render those Collections